ABSTRACT

A fresh air controller interfaces directly with the electromechanical circuit of an air-conditioner to control its operating settings based upon detected Carbon Dioxide (CO2) level in Parts-Per-Million (PPM) using a "Capno-Switch" which is in essence a specially designed single-beam NDIR CO2 sensor enhanced with features and specifications to render it rugged, compact and very low-cost; unlike conventional single-beam NDIR CO2 sensors, the "Capno-Switch" is capable of providing long-term stability and accuracy in CO2 measurements. The operating settings it can control for the air-conditioner include 1) shutting off the fan, cooling unit and fresh air damper to save energy when the detected CO2 level in the cold air duct is less than 600 PPM; 2) turning on only the fan when the CO2 level is between 600 –1, 000 PPM; 3) turning on both the fan and the cooling unit when the CO2 level is between 1,000 – 2,000 PPM and 4) starting to open the fresh air damper to let fresh air in when the CO2 level is in excess of 2,000 PPM. With the incorporation of the "Capno-Switch" as a fresh air controller, air-conditioners can now provide good indoor air quality while at the same time save energy by effectively shutting itself down when nobody is detected to be present.